



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,752	11/19/2003	Craig Ernsberger	CTS-2405	6196
29184	7590	07/05/2005	EXAMINER	
CTS CORPORATION 905 W. BLVD. N ELKHART, IN 46514			ALLEN, ANDRE J	
			ART UNIT	PAPER NUMBER
			2855	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/716,752

Applicant(s)

ERNSBERGER, CRAIG

Examiner

Andre J. Allen

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 35 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11-26-04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,4-9,19,24,26,27-29 is rejected under 35 U.S.C. 102(b) as being anticipated by Bauer et al (US 4932266).

Regarding claims 1,24,27,31,32 and 35 Bauer et al teaches providing a rigid substrate (col. 5 lines 5-10) connected to a housing (fig. 1) secured to a vessel containing a medium (col. 2 lines 55-60) bearing a pressure sensitive resistor 33 having a surface exposed to the pressure sensitive resistor to the pressurized medium and detecting the compression of the electrical resistance of the pressure sensitive resistor (col. 4 lines 63-68-col. 5 lines 1-15).

Regarding claims 4 and 26 Bauer teaches the substrate is ceramic (col 3 lines 45-50) and the resistor is a thick/thin film resistor (col 3 lines 30-35).

Regarding claim 5 Bauer teaches a conductor 32 is attached to each end of the resistor.

Regarding claims 6 and 28 Bauer et al teaches the sensor does not have a diaphragm (abstract).

Regarding claim 7 Bauer et al teaches the pressurized medium presses uniformly on all exposed surfaces of the resistor (col. 5 lines 10-15).

Regarding claims 8,19 and 29 Bauer teaches a plurality of vias/terminals 23 extending therethrough, the vias connected to the conductors (col. 3 lines 20-23)

Regarding claim 9 Bauer et al teaches a voltage is applied to the resistor, the pressure sensor being adapted to output an electrical signal that changes in response to a pressure change in the media (col. 4 lines 63-68-col. 5 lines 1-15).

Regarding claim 33 Bauer et al teaches the resistor is covered by a overcoat (col 1 lines 60-65).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 2,3 and 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauer et al (US 4932266).

Regarding claims 2,3 and 25 Buaer et al inherently teaches a pressure range but does not teach the measured pressure range is

greater than 500 pounds per square inch or 0-55,000 psi. It would have been obvious to one having ordinary skill in the art of pressure sensors at the time the invention was made to modify the pressure range to be detected, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In this particular case since Bauer discloses a pressure sensor, it would be indicative that a range of pressure would be inherently disclosed. Further it would take a person having ordinary skill in the art to improve/ modify these ranges without undue experimentation for the purpose of optimizing the sensitivity of a sensor.

4. Claims 10, 11 and 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauer et al (US 4932266) in view of Tai et al (US 6782755).

Regarding claims 10 and 36 Bauer et al teaches a pressure resistive element 33 having a height, width and length but does not teach four resistors located on the substrate and are connected to form a Wheatstone bridge. Tai et al teaches four resistors are located on the substrate and are connected to form a Wheatstone bridge (fig. 6). It would

have been obvious to a person having ordinary skill in the art of pressure sensors at the time the invention was made to modify Bauer et al with a Wheatstone bridge structure as taught by Tai et al for the purpose of creating a pressure sensor that can be used in various environments.

Regarding claim 11 Bauer et al does not teach the substrate has a first surface and a second surface, two resistors being mounted to the first surface and two resistors being mounted to the second surface, the resistors connected together to form a Wheatstone bridge. Tai et al teaches the substrate (fig. 1) has a first surface and a second surface, two resistors being mounted to the first surface and two resistors being mounted to the second surface, the resistors connected together to form a Wheatstone bridge (col. 4 lines 66-col. 5 lines 1-4). It would have been obvious to a person having ordinary skill in the art of pressure sensors at the time the invention was made to modify Bauer et al to include a first surface and a second surface, two resistors being mounted to the first surface and two resistors being mounted to the second surface, the resistors connected together to form a Wheatstone bridge as taught by Tai et al for the purpose of enabling small sized, inherent overpressure protection, precise dimension control and easy packaging (Tai et al col. 1 lines 49-53)

5. Claims 12-16, 18 and 20 –23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauer et al (US 4932266) in view of Kurtz (US 6272928).

Regarding claims 12, 15, 18, 21 and 34 Bauer et al teaches a pressure sensing structure having a housing (fig. 1) and pressure sensitive resistor 33 measuring a pressure. However, Bauer et al does not teach a substrate having a first surface and a second surface, the first surface adapted to be exposed to a first pressure level contained within the pressure vessel, the second surface adapted to be exposed to a second pressure level both resistors being connected to circuits and the resistor buried in the substrate. Kurtz et al teaches a substrate having a first surface and a second surface (fig. 1), the first surface adapted to be exposed to a first pressure level (abstract) contained within the pressure vessel, the second surface adapted to be exposed to a second pressure level (abstract) with a plurality of resistors connected to circuits (col. 5 lines 49-56) and the resistor buried in the substrate (fig. 1). It would have been obvious to a person having ordinary skill in the art of pressure sensors at the time the invention was made to modify the pressure sensor taught by Bauer et al with a first surface and a second surface, the first surface adapted to be exposed to a first pressure level contained within the pressure vessel, the second surface adapted to be exposed to a second pressure level as

taught by Kurtz et al for the purpose of cooperatively provide a common output indicative of a difference between first and second pressures as well as being able to separately measure absolute pressure (Kurtz et al col. 2 lines 25-31).

Regarding claims 13 and 20 Bauer et al teaches a first resistor 33 changes resistance in response to a change in the first pressure level detecting the electrical resistance of the pressure sensitive resistor (col. 4 lines 63-68-col. 5 lines 1-15).

Regarding claims 14,16,22 and 23 Bauer et al does not teach the second resistor has a substantially constant resistance in response to a substantially constant second pressure level and the electronic circuit is adapted to receive an electrical signal as an input and provide a conditioned electrical signal as an output. Kurtz et al teaches the second resistor has a substantially constant resistance in response to a substantially constant second pressure level (col. 6 lines 15-30) and the electronic circuit is adapted to receive an electrical signal as an input and provide a conditioned electrical signal as an output (col. 5 lines .

It would have been obvious to a person having ordinary skill in the art of pressure sensors at the time the invention was made to modify the sensor taught by Bauer et al with a substantially constant resistance in response

Art Unit: 2855

to a substantially constant second pressure level and the electronic circuit is adapted to receive an electrical signal as an input and provide a conditioned electrical signal as an output as taught by Kurtz et al for the purpose of simultaneously measuring an electrical output indicative of a pressure differential between first and second pressures.

Regarding claim 16 Bauer et al teaches the electronic circuit is adapted to receive an electrical signal as an input and provide a conditioned electrical signal as an output (col. 5 lines 49-56).

Conclusion

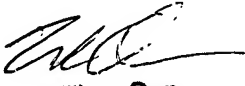
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre J. Allen whose telephone number is 571-272-2174. The examiner can normally be reached on mon-fri 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2855

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

André Allen
Patent Examiner
Art Unit 2855



William Oen
Primary Examiner